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(56) Documents cited  
GB 2092276 A EP 0227612 A1 WO 85/05672 A1  
US 4856791 A US 4850596 A US 4821260 A  
US 4787289 A US 4773653 A

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(54) **Bullet trap**

(57) A bullet trap consisting of a container, part at least of which is made of a self-sealing material, for example a thermoplastic or elastic material, and filled with granules of rubber is useful to stop all small arms ammunition; to contain all spent bullets and lead particles within the trap; to allow the easy removal of spent bullets and lead particles from the trap; to permit the trap to be portable; to reduce the noise of bullet impacts; and to permit the trap to be built in curved shapes. The amount of lead and lead vapours in range atmospheres is reduced. The containers are preferably cubes which can be stacked for easy installation and rotated to expose fresh surfaces to the line of fire and thereby extend the useful life of the bullet trap.

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# GRANULAR RUBBER BULLET AND POLLUTION TRAP

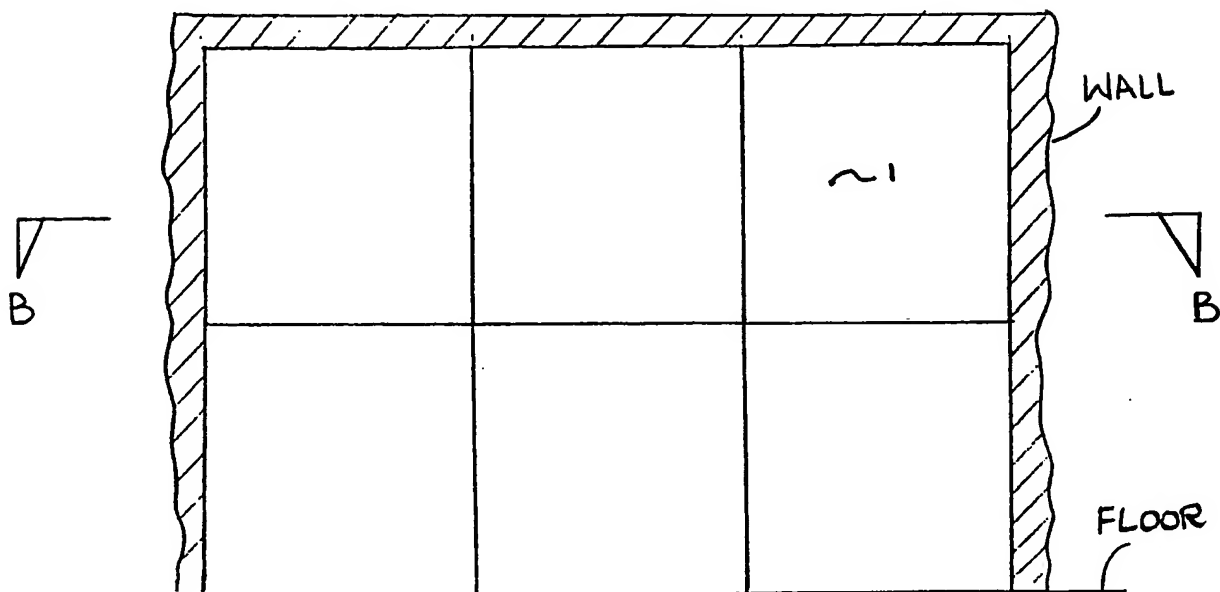


FIG 1

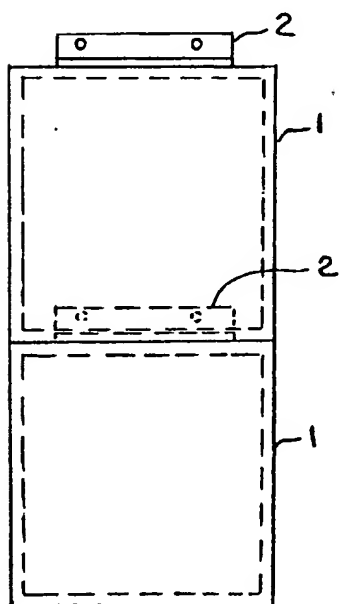


FIG 2

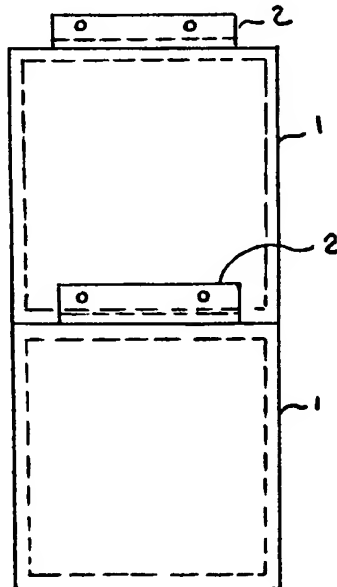


FIG 3

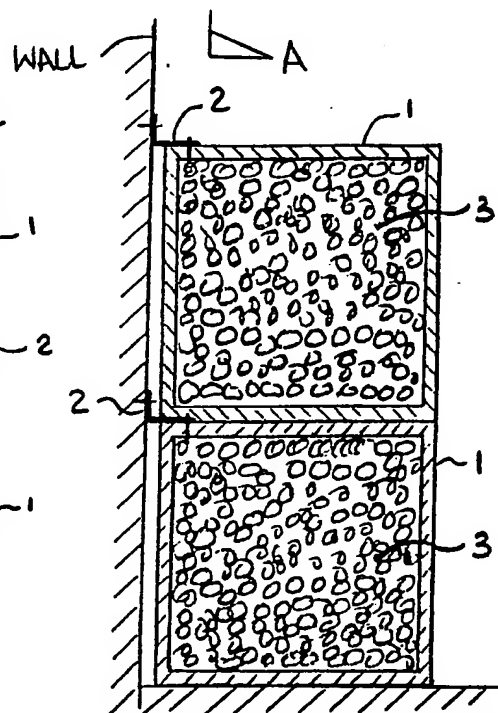


FIG 5 (SECTION A-A)

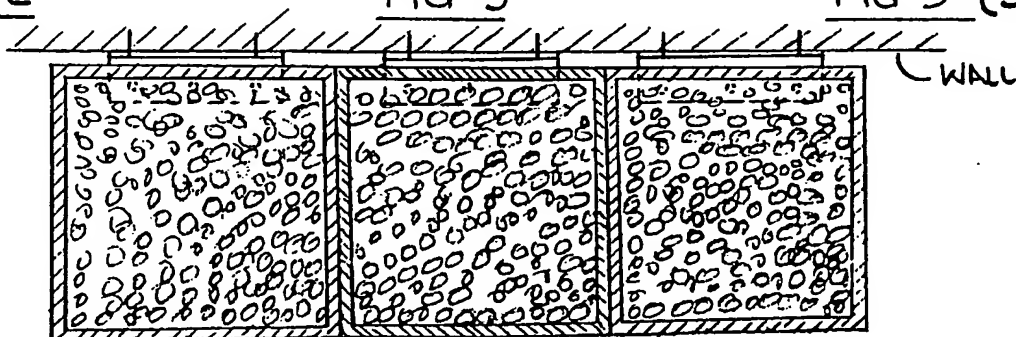


FIG 4 (SECTION B-B)

**GRANULAR RUBBER BULLET & LEAD POLLUTION TRAP**

This invention relates to a bullet trap system for small arms firearms shooting.

Small arms weapons shooting is widely practised for security as well as for sporting reasons.

5 All safe firearms shooting practices require that the fired bullets are stopped by a bullet trap of some description.

Bullet traps currently used are plagued with pollution and maintenance problems. Sand traps occupy large areas and the removal of spent bullets difficult. Steel traps are noisy and  
10 lead particles are frequently lodged in hard to reach places within the trap structure. For the safety of shooters, a rubber curtaining needs to be hung in front of the trap to prevent splashback, fragments of metal, from bouncing back from the trap. Solid rubber bullet traps soon fill up with lead and run the risk of ricochet.  
15 Rubber strips soon get shot away and require frequent replacement.

Most of the existing bullet traps are permanently fixed in place and shooting can only be done in one general direction.

None of these existing traps are totally pollution-free and exposed lead bullets or particles exude toxic vapours that are not

always cleared by ventilation systems.

There is an increase in the requirement for curved bullet traps as needed for projected image shooting. None of the traps currently used offer themselves easily to curved shapes.

5        There is a market for a bullet trap system that safely stops all small arms projectiles fired into it, which substantially contains all lead bullets and lead particles, which allows the easy removal of bullet debris from the trap, which is portable, which reduces the noise of bullets striking the trap and which can be  
10        easily built to form smooth, curves shapes.

An object of the present invention is to provide a bullet trap for use with small arms weapons shooting that will carry out at least the following functions:

- (a) Allow all bullets fired into it to be stopped safely.
- 15        (b) Allow all spent bullets and lead particles to remain trapped within the confines of the bullet trap.
- (c) Allow the easy removal of spent bullets and lead particles from the trap.
- (d) Allow the trap to be portable
- 20        (e) Allow the trap to accept bullet strikes without generating excessive noise.
- (f) Allow the trap to be built in curved shapes.

To this end apparatus according to the present invention comprises:

- means for allowing all bullets fired into the trap to be safely  
25        stopped.
- means for allowing the substantial part of all spent bullets and

lead particles to remain trapped within the confines of the trap.

- means for the easy removal of lead debris from the trap.

- means for allowing the trap to be portable

- means for suppressing the noise of bullets striking the trap.

5 - means for allowing the trap to be built in curved shapes.

The preferred embodiment of the present invention is a bullet trap system that comprises a container in the shape of a cube, or a plurality of containers, made of a substantially self-sealing material, as for example a thermoplastic or an elastic material, and

10 filled with coarse granules of rubber.

The container or containers may be supported on the floor, hung from the ceiling or fixed to the walls of a shooting range.

Use of the preferred embodiment of the invention gives rise to the following advantages.

15 1 It allows all small arms projectiles fired into the trap to be safely stopped. The amount of rubber granules provided will be sufficient to stop the bullets within the dimensions of the cube.

2 It will contain all spent lead within the trap. All the bullets will enter the side of the trap. The self-sealing material  
20 will substantially close up the bullet holes and prevent any of the coarse rubber granules from falling out of the trap. None of the bullets will exit the trap and thus all bullets and bullet debris will remain within the rubber granular material of the trap.

3 It allows the easy removal of lead debris from the trap.  
25 By opening one side of the cube and pouring the contents of the trap

into a tray, all lead particles can be separated from the rubber granules and removed from the range. The rubber is refilled into the trap for reuse.

4 It is portable. The dimensions of the cubic trap are such  
5 that the cube together with its contents can be man carried.

5 It will suppress the noise of bullet impacts. The self-sealing material at the side of the trap as well as the granules of rubber are relatively soft materials which only produce a low volume noise when struck by a bullet.

10 6 It will allow the trap to be built in curved shapes. The self-sealing material, can be bent into any desired curved shape. The rubber granules will take up the shape of the container they are poured into.

In order that the invention may be well understood, the  
15 presently preferred embodiment thereof, which is given by way of example only, will now be described with reference to the accompanying drawing, in which:

Fig 1 shows the general arrangement of the Granular Rubber Trap in elevation

20 Fig 2 shows a single column of the trap in front elevation

Fig 3 shows a single column of the trap in rear elevation

Fig 4 shows the trap in sectional plan A-A

Fig 5 shows the trap in sectional elevation B-B

A detailed description of the components of the invention

followed by its operational functions are listed below with reference to the accompanying drawing:

In Fig 1 item 1 is a hollow cube made of a self-sealing material, as for example a thermoplastic or elastic material. This material is rigid enough to make the cube structurally stable and has the property of substantially closing up any bullet holes made in it. Item 2 is a bracket made of metal. The bracket is attached to the top of the cube and to the backwall of the range. The wall attachment is such that the cube can be lifted and removed from the wall

Figs 2 to 5 show items 1 and 2 from different points of view.

In Figs 4 and 5, items 3 are coarsely cut rubber granules

#### OPERATION OF THE GRANULAR RUBBER TRAP

A bullet fired from a small arms weapon will pass through the side of the cube 1 and will strike the mass of rubber granules 3. The bullet will pass along within the mass of granules gradually losing its energy until it stops moving. The depth of the rubber granular band is such that the bullet will always stop within the cube. The cube material will seal the bullet hole and present a virtually unperforated surface to the next bullet.

In this way a plurality of bullets can be stopped by the

bullet trap, and the trap continued to be used until it is judged to be near the point of rupture. If in fact the cube material is perforated by bullets the trap will continue to function safely for an additional number of shots as the coarse granules will not spill  
5 out of the cube.

When required, the cube with its contents and bracket 2 can be easily lifted off the wall supports. The cube can then be opened and the rubber granules together with all the trapped bullets and lead particles can be poured into a tray for lead separation.

10 The cleansed rubber granules are put back into the cube and the bracket 2 fixed to a different edge of the cube. When the cube is replaced on the wall a fresh side of the cube will be exposed to the line of fire. In this way four sides of the bullet trap will be brought into play and extend the life of the trap.

15 Although the Granular Rubber Trap detailed above has been described for use with a container in the shape of a cube, the apparatus can be used equally well with a container of any shape.

Although the Granular Rubber Trap detailed above has been described for use with a container of self-sealing material, the  
20 apparatus can be used equally well with only one or more sides of the container made of self-sealing material and the rest of the container made of some other material.

Although the Granular Rubber Trap detailed above has been described for use with rubber granules, the apparatus can be used  
25 equally well with granules of some other material.



## CLAIMS

1. A Granular Rubber Bullet and Lead Pollution Trap consisting of a container in the shape of a cube, made of self-sealing material, as for example a thermoplastic or an elastic material, and filled with granules of rubber: to stop all small arms ammunition; to contain  
5 all spent bullets and lead particles within the trap; to allow the easy removal of lead bullets and lead particles from the trap; to permit the trap to be portable; to permit the trap to reduce the noise of bullet impacts as compared with steel bullet traps; and to permit the trap to be built in curved shapes.
- 10 2. A bullet trap as described in Claim 1, wherein the container is of any shape.
3. A bullet trap as described in Claims 1 and 2, wherein only a part of the container is made of a self-healing material with the remainder of the trap made from some other material.
- 15 4. A bullet trap as described in Claims 1, 2 and 3, wherein the container is only partially filled with rubber granules: or wherein the container is filled or partially filled with granules of some material other than rubber: or wherein the filling material is of some shape other than granular.